

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: October 13, 2022
Hours: 19:00 Hours

Date: 30-Aug-22 **Time:** 19:23 hrs **Load(MW):** 536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	186.11	400kV THP - Siliguri Line - I	264.51	
		Unit- II	185.00	400kV THP - Siliguri Line - II	263.21	
		Unit- III	185.19	400kV THP - Siliguri Line- IV	256.34	
		Unit- IV	185.46	400kV THP - Malbase Line - III	322.18	
		Unit- V	185.99	400kV Malbase - Siliguri Line	238.05	
		Unit- VI	185.30	-	-	
		Total	1,113.05	Auxiliary Consumption & Transformation Losses at Generator end	0.61%	
2	720MW MHP	Unit-I	135.13	400kV MHP - Jigmeling Line - I	228.29	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	135.11	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	135.45	400kV MHP - Jigmeling Line - III	229.99	
		Unit-IV	135.51	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	78.90	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-1.60	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	112.78	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	169.25	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	169.46	
		-	-	80MVA, 220/132kV ICT - I (HV)	21.10	
		-	-	80MVA, 220/132kV ICT - II (HV)	21.50	
		-	-	220kV Tsirang - Jigmeling Line	-16.50	
-	-	132kV Gelephu - Salakati Line	27.20			
Total	541.20	Auxiliary Consumption & Transformation Losses at Generator end	0.74%			
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	79.29	
		Unit- II	91.18	220kV CHP - Birpara Line- II	79.16	
		Unit- III	91.63	220kV CHP - Malbase Line- III	97.98	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	82.31	
		-	-	220kV Malbase - Birpara Line	54.48	
		-	-	66kV CHP - Chumdo Line	1.12	
		-	-	66kV CHP - Gedu Line	8.45	
		-	-	3x3MVA, 66/11kV TFR	1.40	
Total	349.34	Auxiliary Consumption & Transformation Losses at Generator end	-0.11%			
4	24MW BHP (U/S)	Unit- I	12.00	220kV BHP - Semtokha Line	49.40	
		Unit- II	11.80	66kV BHP - Lobeysa Line	29.26	
		Total	23.80	220kV BHP - Tsirang Line	-14.55	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.59	
		Unit- II	21.10	30MVA ICT, 220/66kV (HV)	6.67	
		Total	41.60	Auxiliary Consumption & Transformation Losses at Generator end	1.07%	
6	126MW DHP	Unit-I	45.40	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	45.56	220kV DHP - Dagapela Line	90.42	
		-	-	220kV Jigmeling - Dagapela Line	-57.90	
		-	-	5MVA, 220/33kV TFR	0.20	
Total	90.96	Auxiliary Consumption & Transformation Losses at Gen. end	0.37%			
7	60MW KHP	Unit- I	16.40	132kV KHP - Nangkhon Line	35.87	
		Unit-II	16.48	132kV KHP - Kilikhar Line	28.86	
		Unit- III	16.33	5MVA, 132/11kV TFR	0.67	
		Unit- IV	16.69	132kV Motanga - Rangia Line	46.87	
		Total	65.90	Auxiliary Consumption & Transformation Losses at Generator end	0.76%	

Note: Generation-Load Summary (MW) for October 13, 2022 at 19:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	1,618.75	342.31	334.83	1,235.04	7.48
2	Eastern Grid	607.10	122.94	118.42	525.56	4.52
Total		2,225.85	465.25	453.25	1,760.60	12.00

Note: Generation-Load Summary for October 13, 2021 at 19:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	947.50	318.46	315.00	601.72	3.46
2	Eastern Grid	395.59	79.12	75.12	343.79	4.00
Total		1,343.09	397.58	390.12	945.51	7.46

NOTE-MAT data collected from site.

1. The Instantaneous load balance,calculated as (Total generation - (Total export-Import) - Total domestic load), do not tend towards zero. This could be due to the following reasons:

- i) Not all the meters are digital and nor are all the meter at all locations can be read at same time (say 9:00hrs) due to many meter to be read manually.
- ii) The clocks of all the locations are not synchronized.

2. This report is generated to give an idea of the generation & load flow for the system at a particular instant.

BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT

Coincidental Maximum Load

Date: October 14, 2022
Hours: 09:00 Hours

Date: 30-Aug-22
Time: 19:23 hrs
Load(MW): 536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	185.98	400kV THP - Siliguri Line - I	267.11	
		Unit- II	185.47	400kV THP - Siliguri Line - II	265.32	
		Unit- III	184.80	400kV THP - Siliguri Line- IV	258.11	
		Unit- IV	184.05	400kV THP - Malbase Line - III	308.03	
		Unit- V	185.80	400kV Malbase - Siliguri Line	246.17	
		Unit- VI	184.69	-	-	
		Total	1,110.79	Auxiliary Consumption & Transformation Losses at Generator end	1.10%	
2	720MW MHP	Unit-I	130.21	400kV MHP - Jigmeling Line - I	236.80	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	130.18	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	120.80	400kV MHP - Jigmeling Line - III	238.20	
		Unit-IV	150.22	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	53.20	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-17.10	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	121.00	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	181.34	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	183.00	
		-	-	80MVA, 220/132kV ICT - I (HV)	11.30	
		-	-	80MVA, 220/132kV ICT - II (HV)	11.30	
		-	-	220kV Tsirang - Jigmeling Line	-10.12	
-	-	132kV Gelephu - Salakati Line	23.08			
Total	531.41	Auxiliary Consumption & Transformation Losses at Generator end	0.60%			
3	336MW CHP	Unit- I	91.27	220kV CHP - Birpara Line- I	75.22	
		Unit- II	91.18	220kV CHP - Birpara Line- II	74.54	
		Unit- III	91.63	220kV CHP - Malbase Line- III	124.16	
		Unit- IV	75.26	220kV CHP - Semtokha Line- IV	65.92	
		-	-	220kV Malbase - Birpara Line	26.66	
		-	-	66kV CHP - Chumdo Line	0.17	
		-	-	66kV CHP - Gedu Line	8.09	
		-	-	3x3MVA, 66/11kV TFR	0.80	
Total	349.34	Auxiliary Consumption & Transformation Losses at Generator end	0.13%			
4	24MW BHP (U/S)	Unit- I	11.40	220kV BHP - Semtokha Line	45.89	
		Unit- II	11.10	66kV BHP - Lobeysa Line	25.62	
		Total	22.50	220kV BHP - Tsirang Line	-8.39	
5	40MW BHP (L/S)	Unit- I	20.40	5MVA, 66/11kV TFR	0.33	
		Unit- II	21.00	30MVA ICT, 220/66kV (HV)	3.80	
		Total	41.40	Auxiliary Consumption & Transformation Losses at Generator end	0.70%	
6	126MW DHP	Unit-I	41.86	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	41.04	220kV DHP - Dagapela Line	82.41	
		-	-	220kV Jigmeling - Dagapela Line	-51.00	
		-	-	5MVA, 220/33kV TFR	0.45	
Total	82.90	Auxiliary Consumption & Transformation Losses at Generator end	0.05%			
7	60MW KHP	Unit- I	16.55	132kV KHP - Nangkhoh Line	16.62	
		Unit-II	16.36	132kV KHP - Kilikhar Line	48.13	
		Unit- III	16.33	5MVA, 132/11kV TFR	0.38	
		Unit- IV	16.47	132kV Motanga - Rangia Line	19.76	
		Total	65.71	Auxiliary Consumption & Transformation Losses at Generator end	0.88%	

Note: Generation-Load Summary (MW) for October 14, 2022 at 09:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	1,606.93	352.92	339.77	1,213.13	13.15
2	Eastern Grid	597.12	109.82	106.03	528.18	3.79
Total		2,204.05	462.74	445.80	1,741.31	16.94

Note: Generation-Load Summary for October 14, 2021 at 09:00hrs.

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	902.60	311.39	309.08	555.41	2.31
2	Eastern Grid	385.18	65.45	63.55	355.53	1.90
Total		1,287.78	376.84	372.63	910.94	4.21

Note: Motanga data collected from site.

1. The Instantaneous load balance,calculated as (Total generation - (Total export-Import) - Total domestic load), do not tend towards zero. This could be due to the following reasons:

- i) Not all the meters are digital and nor are all the meter at all locations can be read at same time (say 9:00hrs) due to many meter to be read manually.
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